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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,412	12/08/2003	Mark A. Ealey	XIN-101J	2452
7590		11/03/2004	EXAMINER	
Iandiorio & Teska		SHAFFER, RICKY D		
260 Bear Hill Road		ART UNIT		
Waltham, MA 02451-1018		PAPER NUMBER		
		2872		

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/730,412	Applicant(s) EALEY, MARK A.	
	Examiner Ricky D. Shafer	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/08/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's election of invention I (claims 1-12) in the reply filed on August 10, 2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claim 13 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on August 10, 2004.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Scott ('343).

Scott discloses mirror device comprising an optical substrate (4) including a mirror surface on one side and a support structure having an array of spaced posts [(1),(2)] on the other side and a plurality of actuators (6) embedded in said support structure spaced from and generally parallel to said mirror surface for applying bending moments to said mirror surface for controllably altering the shape of said mirror surface. Note figures 1 to 2E along with the associated description thereof.

Art Unit: 2872

5. Claims 1, 2, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Sawicki ('379).

Sawicki discloses mirror device comprising an optical substrate (12) including a mirror surface (13) on one side and a support structure having an array of spaced posts [(14),(16),(18),(20),(22),(24),(26),(28)] on the other side and a plurality of actuators [(42),(44),(46),(48)] embedded in said support structure spaced from and generally parallel to said mirror surface for applying bending moments to said mirror surface for controllably altering the shape of said mirror surface. Note figures 1 and 3 to 7 along with the associated description thereof.

6. Claims 1, 2, 5-9, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Fuschetto ('507).

Fuschetto discloses mirror device comprising an optical substrate (11) including a mirror surface on one side and a support structure having an array of intersecting ribs/posts [(13a), (13b), (15a),(15b),(17a),(17b)] on the other side and a plurality of electrostrictive actuators [(13),(15),(17)] embedded in said support structure spaced from and generally parallel to said mirror surface for applying bending moments to said mirror surface for controllably altering the shape of said mirror surface. Note figures 1 to 6 along with the associated description thereof.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2872

8. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scott ('343), Sawicki ('379) or Fuschetto ('507) in view of Anthony et al ('358).

Scott, Sawicki and Fuschetto each disclose all of the subject matter claimed, note the above explanation, except for explicitly stating that the material employed for the mirror body/faceplate comprises silicon carbide.

Anthony et al teaches it is well known to use a silicon carbide material for a deformable mirror body/faceplate in the same field of endeavor for the purpose of obtaining thermal stability.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mirror body/faceplate of Scott, Sawicki or Fuschetto to include a silicon carbide material as taught by Anthony et al in order to promote/provide thermal stability.

9. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scott ('343) or Sawicki ('379) in view of Aldrich et al ('848), Anthony et al ('358) or Shen ('490).

Scott and Sawicki each disclose all of the subject matter claimed, note the above explanation, except for explicitly stating that the actuators includes a lead magnesium niobate electrostrictive device.

Aldrich et al, Anthony et al and Shen each teaches it is well known to use lead magnesium niobate electrostrictive actuators in the same field of endeavor for the purpose of altering the shape of a mirror body/faceplate.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the actuators of Scott or Sawicki to include a lead magnesium

Art Unit: 2872

niobate electrostrictive device as taught by Aldrich et al, Anthony et al or Shen in order to promote/provide a large dynamic range of adjustability.

10. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fuschetto ('507) in view of Aldrich et al ('848), Anthony et al ('358) or Shen ('490).

Fuschetto discloses all of the subject matter claimed, note the above explanation, except for explicitly stating that the electrostrictive actuators includes a lead magnesium niobate material.

Aldrich et al, Anthony et al and Shen each teaches it is well known to use lead magnesium niobate electrostrictive actuators in the same field of endeavor for the purpose of altering the shape of a mirror body/faceplate.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electrostrictive actuators of Fuschetto to include a lead magnesium niobate electrostrictive device as taught by Aldrich et al, Anthony et al or Shen in order to promote/provide thermal stability.

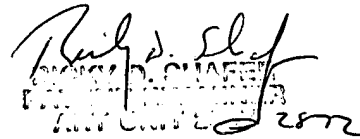
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ricky D. Shafer whose telephone number is (571) 272-2320. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about

Art Unit: 2872

the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RDS

November 01, 2004



R. D. Sly
RDS